IN THE CLAIMS:

1. (previously presented) A method for detecting collisions between an obstacle and an electromechanical system having a mechanical output controlled by a servo system, said method comprising:

inputting a forcing function x_i to the servo system to direct the mechanical output to move in an intended manner;

generating a difference signal at a monitoring point M representing a difference between forcing function x_i and a feedback signal dependent upon the mechanical output;

injecting a feed forward signal into the servo system, said feed forward signal dependent upon the forcing function and effective to increase a detection threshold for collision stimulus at monitoring point M; and

processing said difference signal to detect a collision.

2. (cancelled)

3. (cancelled)

4. (previously presented) A method in accordance with Claim 22 wherein said optimizing transfer function y_o/x_2 comprises optimizing y_o/x_2 without the influence of the feed forward signal.

5. (cancelled)

6. (cancelled)

7. (previously presented) An imaging system comprising:

a radiation source;

a radiation detector positioned to receive radiation emitted by said source;

a servo system configured to position at least one of said source, said detector, and an object to be scanned; and

said imaging system configured to input a forcing function x_i to the servo system to direct at least one of said source, said detector, and said object to be scanned to move in an intended manner; generate a difference signal at a monitoring point M representing a difference between forcing function x_i and a feedback signal dependent upon a mechanical output; injecting a feed forward signal in said servo system, said feed forward signal dependent upon the forcing function and effective to increase a detection threshold for collision stimulus at monitoring point M; and process said difference signal to detect a collision.

8. (cancelled)

9. (cancelled)

10. (cancelled)

11. (cancelled)

12. (previously presented) A system in accordance with Claim 32 wherein said computer further configured to optimize y_o/x_2 without the influence of the feed forward signal.

13. (cancelled)

14. (cancelled)

15. (cancelled)

16. (cancelled)

17. (cancelled)

18. (cancelled)

19. (currently amended) A method of operating a servo system having an initial level of aggressiveness for responding to a collision and a predetermined desired level of aggressiveness for responding to an input control signal, said method comprising:

reducing the level of aggressiveness for responding to the collision; and

maintaining the desired level of aggressiveness for responding to the input control signal using an input control signal feed forward that forces the system output response to a collision to substantially equal the system response to the input control signal when the feed forward substantially equals zero.

20. (previously presented) A method in accordance with Claim 19 wherein the servo system includes a feedback system, said reducing the level of aggressiveness comprises reducing the level of aggressiveness by optimizing the feedback system for collisions.

21. (previously presented) A method in accordance with Claim 19 wherein said maintaining the desired level of aggressiveness for responding to the input comprises maintaining the level of aggressiveness for responding to the input by providing a feed forward term to the servo system.

22. (previously presented) A method in accordance with Claim 1 further comprising optimizing a transfer function y_o/x_2, wherein y_o is a signal representative of the mechanical output and x_2 is a load function.

23. (previously presented) A method in accordance with Claim 22 wherein said feed forward signal dependent upon the forcing function is selected to also optimize a transfer function y_o/x_i.

24. (previously presented) A method in accordance with Claim 21 wherein said feed forward signal is injected into a plurality of points in the servo system.

25. (previously presented) A method in accordance with Claim 1 further comprising initiating a command to stop movement when a collision is detected.

26. (previously presented) An apparatus comprising:

a servo system;

an electromechanical system having a mechanical output controlled by said servo system;

said servo system configured to input a forcing function x_i to the servo system to direct the mechanical output to move in an intended manner, generate a difference signal at a monitoring point M representing a difference between forcing function x_i and a feedback signal dependent upon said mechanical output, and inject a feed forward signal into the servo system, said feed forward signal dependent upon the forcing function and effective to increase a detection threshold for collision stimulus at monitoring point M; and

said apparatus further configured to process said difference signal to detect a collision.

27. (previously presented) An apparatus in accordance with Claim 26 further configured to optimize a transfer function y_o/x_2 of the servo system, wherein y_o is signal representative of said mechanical output and x_2 is a load function.

28. (previously presented) An apparatus in accordance with Claim 27 wherein said feed forward signal dependent upon the forcing function is selected to also optimize a transfer function y_o/x_i.

29. (previously presented) An apparatus in accordance with Claim 27 wherein y_o/x_2 is optimized without the influence of the feed forward signal.

30. (previously presented) An apparatus in accordance with Claim 26 configured to inject said feed forward signal into a plurality of points in said servo system.

31. (previously presented) An apparatus in accordance with Claim 26 further configured to initiate a command to stop movement when a collision is detected.

32. (previously presented) A system in accordance with Claim 7 further configured to optimize a transfer function y_o/x_2 of the servo system, wherein y_o is signal representative of said mechanical output and x_2 is a load function.

33. (previously presented) A system in accordance with Claim 32 wherein said feed forward signal dependent upon the forcing function is selected to also optimize a transfer function y_o/x_i.

34. (previously presented) A system in accordance with Claim 7 configured to inject said feed forward signal into a plurality of points in said servo system.

35. (previously presented) A system in accordance with Claim 7 further configured to initiate a command to stop movement when a collision is detected.